**DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 1.28

# WELDING INSPECTION REPORT

**Resident Engineer:** Siegenthaler, Peter
**Address:** 333 Burma Road
**City:** Oakland, CA 94607

**Report No:** WIR-022105
**Date Inspected:** 21-Mar-2011

**Project Name:** SAS Superstructure
**Prime Contractor:** American Bridge/Fluor Enterprises, a JV
**Contractor:** American Bridge/Fluor Enterprises, a JV

**OSM Arrival Time:** 700
**OSM Departure Time:** 1730
**Location:** Job Site

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| **CWI Name:** | Steve Jensen and John Pagliero | | | **CWI Present:** | ☑ Yes | ☐ No | |
| **Inspected CWI report:** | ☐ Yes | ☑ No | ☐ N/A | **Rod Oven in Use:** | ☑ Yes | ☐ No | ☐ N/A |
| **Electrode to specification:** | ☑ Yes | ☐ No | ☐ N/A | **Weld Procedures Followed:** | ☑ Yes | ☐ No | ☐ N/A |
| **Qualified Welders:** | ☑ Yes | ☐ No | ☐ N/A | **Verified Joint Fit-up:** | ☐ Yes | ☑ No | ☐ N/A |
| **Approved Drawings:** | ☑ Yes | ☐ No | ☐ N/A | **Approved WPS:** | ☑ Yes | ☐ No | ☐ N/A |
| | | | | **Delayed / Cancelled:** | ☐ Yes | ☑ No | ☐ N/A |

**Bridge No:** 34-0006
**Component:** Orthotropic Box Girder

**Summary of Items Observed:**

Caltrans Office of Structural Material (OSM) Quality Assurance Inspector (QAI) Joselito Lizardo was present at the Self Anchored Suspension (SAS) job site as requested to perform observations on the welding of components for the San Francisco Oakland Bay Bridge (SFOBB) Project.

At OBG 6E-PP37.5-E5-NW LSW longitudinal stiffener inside, QA randomly observed ABF welder Hua Qiang Hwang perform 3G (vertical) Shielded Metal Arc Welding (SMAW) complete joint penetration (CJP) welding fill pass to cover pass on the stiffener splice butt joint. The stiffener plates being welded are made of high strength plate material HPS 485W and has a thickness of 30mm. The joint has a double V joint preparation that was welded from one side and after the completion from one side to be back gouged, Non Destructive Testing (NDT) tested using Magnetic Particle Testing (MT) and back welded to the other side. The welder was noted using E9018H4R with 1/8” diameter electrode implementing Caltrans approved welding procedure specification (WPS) ABF-WPS-D1.5-1012-3. The joint being welded was root welded using a ceramic backing. The splice joint was preheated to greater than 200 degrees Fahrenheit using Miller Proheat 35 Induction Heating System heater blanket located at the opposite side of the plate prior/during welding. The QA Inspector noted the ABF QC Steve Mc Connell was on site monitoring the in process preheats and welding parameters. During the shift, QA noted ABF QC Steve Mc Connell was closely monitoring the issuance of E9018H4R electrodes due to its limited exposure time allowed. At the end of the shift, cover pass welding on both sides of the butt joint was completed and the welder was instructed by QC to hold the preheat of >200° F for three more hours after welding as required. The welder started preparing the next splice butt joint at LSE longitudinal stiffener of the same OBG location.

QA randomly observed ABF/JV qualified welder Rory Hogan continuing to perform CJP groove (splice) back

welding fill pass on Orthotropic Box Girder (OBG) 9E/10E bottom plate 'D2' outside. The welder was observed back welding in the 4G (overhead) position utilizing a dual shield Flux Cored Arc Welding (FCAW-G) with E71T-1M, 1/16" diameter wire electrode and implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-3110-4. The welder was using a track mounted welder holder assembly that was remotely controlled. The joint being welded has the backing bar gouged using the Esab Plasma Arc machine and was ground smooth. The gouged and ground splice butt joint was also Non Destructive Testing (NDT) tested using the Magnetic Particle Testing (MT). The splice joint was preheated and maintained to greater than 150 degrees Fahrenheit using Miller Proheat 35 Induction Heating System located on top of the plate prior welding and by moving the blanket to the side of the weld being welded during welding. The vicinity was also properly protected from wind and other climatic conditions. ABF Quality Control (QC) Steve Jensen was noted monitoring the welding parameters of the welder. Prior welding, the welder has to fix his perimeter welding protection (tarp) that was damaged by strong wind during the past few days. During the shift, fill pass welding was still continuing and should remain tomorrow.

At OBG 8W-PP70.5-W5-SE deck access hole to top deck plate outside, QA observed ABF welder Jorge Lopez perform welding repair number three (R3). This third time repair has Request for Weld Repair (RWR) number of 201103-003 dated March 7, 2011. The welder was noted welding in 1G (flat) position utilizing SMAW with 1/8" diameter E7018H4R electrode implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-1001 Repair. The third time welding repair located at Y=3260 and having excavation profile of 100mm long x 25mm wide x 12mm deep was excavated to a boat shape profile and was tested with Magnetic Particle Testing (MT) prior welding. During welding, ABF QC Steve Mc Connell was noted monitoring the welder and his welding parameters. QA noted parameter during welding was 135 amperes which appears in compliance to the WPS. At the end of the shift, welding repair at this location was completed.

At tower south shaft splice number two (elevation 83meters), ABF welder Erick Sparks and company were noted prepping base metal surface splice plate to be fillet welded by removing the paint coating all around the would be weld area and its adjacent area. The welder was also noted waiting for information concerning the seal welding between the tower lift joint. The query was relayed to SMR Jason Lee who happened to be on site and through Caltrans via Doug Wright to Mark Woods. According to Doug Wright of Caltrans, Mr. Woods came to the job site and assessed the situation then came out with the decision that the seal welding between the abutting lift joint was not necessary. During the shift, the welder tack welded lifting lug temporary attachments to the interior corner closure plate to be used to pull the splice plate in place. The welder was noted using SMAW with 1/8" diameter E7018 electrode implementing Caltrans approved ABF-WPS-D15-F1200A. ABF QC John Pagliero was on site monitoring the preheat and welder's welding parameters. At the end of the shift, the lower interior corner closure splice plate was put in place and tack welded to the corner closure plate.

At the request of Quality Control Field Supervisor, Bonifacio Daquinag, QA has randomly verified the QC MT of the Complete Joint Penetration (CJP) welding of one top deck access hole to top deck plate butt joint. The QA verification was performed to verify that the welding and the MT inspection performed by the QC inspector meet the requirements of the contract documents. At the conclusion of the QA verification it appeared that the weld and the QC inspection complied with the contract documents.

1. 6E-PP37.5-E5 – deck access hole to top deck plate outside – QA MT verified

# WELDING INSPECTION REPORT

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**Summary of Conversations:**

According to Doug Wright of Caltrans, Mr. Mark Woods came to the job site and assessed the situation of the interior corner closure plate then came out with the decision that the seal welding between the abutting lift joint was not necessary.

**Comments**

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact SMR Nina Choy 510-385-5910, who represents the Office of Structural Materials for your project.

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| **Inspected By:** | Lizardo,Joselito | Quality Assurance Inspector |
| **Reviewed By:** | Levell,Bill | QA Reviewer |